

the International Search Report are of record in the present application (see Office Action mailed August 14, 2002, and attached forms).

The Office Action rejects claims 1-7, 11-16, 20-25, 42-48, and 52-57. The Office Action further objects to claims 8-10, 17-19, 26-41, 49-51, and 58-60 as depending on rejected base claims.

As detailed below, the Applicant respectfully submits that the Office Action fails to properly set forth a *prima facie* anticipation and obviousness rejections under 35 U.S.C. §§ 102, 103. To more particularly point out and distinctly claim the subject matter that the Applicant regards as the invention, however, and without conceding the rejections set forth in the Office Action as proper, the Applicant hereby cancels claims 2 and 43, and amends claims 1, 3, 5, 11-12, 14, 20-22, 27, 42, 44, 46, 52-53.

The claims pending following the cancellations and amendments make clear that the transmission of a radio-frequency pulse into a multipath propagation medium results in a received signal. The received signal comprises a plurality of pulses that result from the transmission of the radio-frequency pulse into the multipath propagation medium. In other words, the transmission of even a single radio-frequency pulse into the multipath propagation medium can result in a received signal with a plurality of pulses.

The plurality of pulses of the received signal includes a first-arriving pulse. The apparatus and methods according to the invention detect the first-arriving pulse that results from transmission of the radio-frequency signal into the multipath propagation medium. The applicant respectfully submits that none of the references of record teaches the claimed subject matter, such as an apparatus for detecting the first-arriving pulse in a received signal, "wherein the received signal comprises a plurality of pulses that result from a transmission of a radio-frequency pulse into a multipath propagation medium, and wherein the plurality of pulses of the received signal comprises the first-arriving pulse."

Furthermore, as noted above, the Applicant respectfully submits that the rejections in the Office Action are improper. The Office Action rejects claims 11-15, 20-24, and 52-56 as anticipated by Fullerton

Independent claim 11, and by implication dependent claims 12-19, include the limitations “wherein the received signal comprises a plurality of pulses that result from a transmission of a radio-frequency pulse in a multipath propagation medium, and wherein the plurality of pulses of the received signal comprises a first-arriving pulse” and “a detector circuitry configured to discriminate from a noise floor the first-arriving pulse of the received signal.” Independent claim 20, and by implication dependent claims 21-41, include the limitations “wherein the received signal comprises a plurality of pulses that result from the transmission of the pulse into the multipath propagation medium, and wherein the plurality of pulses of the received signal comprises a first-arriving pulse” and “a detector circuitry configured to discriminate from a noise floor the first-arriving pulse of the received signal.” Independent claim 52, and by implication dependent claims 53-60, include the limitations “wherein the received signal comprises a plurality of pulses that result from the transmission of the radio-frequency pulse into the multipath propagation medium, and wherein the plurality of pulses of the received signal comprises a first-arriving pulse” and “discriminating from a noise floor the first-arriving pulse of the received signal by using a detector circuitry.”

The Applicant respectfully submits that Fullerton fails to teach at least one claimed limitation and, therefore, fails to anticipate claims 11-15, 20-24, and 52-56. More specifically, Fullerton relates to, and teaches, detecting channel coincidence. *See, e.g.*, Fullerton at Abstract; col. 2, lines 29-40; col. 2, lines 56-58. According to the Applicant’s best understanding, Fullerton does not relate to, and fails to teach, the claimed limitations “a detector circuitry configured to discriminate from a noise floor the first-arriving pulse of the received signal” and “discriminating from a noise floor the first-arriving pulse of the received signal by using a detector circuitry.”

The Applicant notes that the passages of Fullerton referenced in the Office Action (for example, col. 12, lines 1-7; col. 2, lines 36-40; Abstract) discuss detecting channel coincidence, not first-arriving pulses. Furthermore, the Applicant has been unable to find any other passages or teachings in Fullerton that relate to detecting first-arriving pulses.

The Applicant therefore respectfully requests that the Examiner set forth *specifically* how Fullerton's teachings regarding channel coincidence relate to, or teach, the claimed apparatus and methods for detecting or discriminating a first-arriving pulse in a received signal, wherein the received signal comprises a plurality of pulses that result from a transmission of a radio-frequency pulse in a multipath propagation medium, and wherein the plurality of pulses of the received signal comprises the first-arriving pulse.

Obviousness Rejection of Claims 1-7, 16, 25, 42-48, and 57 Over Fullerton in View of U.S. Pat. No. 6,043,771 to Clark ("Clark")

The Office Action rejects claims 1-7, 16, 25, 42-48, and 57 as unpatentable pursuant to 35 U.S.C. § 103(a) over Fullerton in view of Clark. The Applicant respectfully submits that the Office Action fails to properly set forth a *prima facie* obviousness rejection.

Independent claim 1, and by implication dependent claims 3-10, include the limitation "a threshold circuitry configured to, in response to the first-arriving signal in the received signal, provide a first-arriving-pulse signal depending on the relative values of the output signal of the correlator circuitry and a threshold signal derived from a noise floor." Independent claim 11, and by implication rejected dependent claim 16, include the limitation "a detector circuitry configured to discriminate from a noise floor the first-arriving pulse of the received signal." Independent claim 20, and by implication rejected dependent claim 25, include the limitation "a detector circuitry configured to discriminate from a noise floor the first-arriving pulse of the received signals." Independent claim 42, and by implication dependent claims 44-51, include the limitation "comparing the

correlation output signal and a threshold signal to provide a first-arriving-pulse signal, wherein the threshold signal is derived from a noise floor.” Independent claim 52, and by implication rejected dependent claim 57, include the limitation “discriminating from a noise floor the first-arriving pulse of the received signal by using a detector circuitry.”

As noted above, Fullerton relates to, and teaches, detecting channel coincidence, not first-arriving pulses. *See, e.g.*, Fullerton at Abstract; col. 2, lines 29-40; col. 2, lines 56-58. According to the Applicant’s understanding, Fullerton does not relate to detecting first-arriving pulses, and fails to teach the claimed limitations quoted above. Furthermore, the Applicant notes that the passages of Fullerton referenced in the Office Action (for example, col. 12, lines 1-7; col. 2, lines 36-40; Abstract) discuss detecting channel coincidence, not first-arriving pulses. Thus, Fullerton fails to teach the claimed limitations quoted above. The Applicant further notes that the Office Action does not allege that Clark provides the missing claimed limitations relating to detecting, discriminating, and/or providing first-arriving pulses, quoted above. Accordingly, the Applicant respectfully submits that the combination of Fullerton and Clark, even if proper, fails to teach the claimed subject-matter.

Moreover, as the Office Action concedes, Fullerton does not describe or teach the claimed limitation “a threshold signal derived from a noise floor.” The Office Action, however, asserts that “Clark teaches a threshold circuit 210, which is derived from the noise level or noise floor (see col. 6 line 47 – col. 7 line 3).” Office Action at 3.

A motivation or suggestion to combine references is an “essential requirement” of a *prima facie* obviousness case. *C.R. Bard, Inc. v. M3 Sys., Inc.*, 48 U.S.P.Q.2d (BNA) 1225, 1232 (Fed. Cir. 1998). The PTO can satisfy its burden of showing obviousness “only by showing some *objective teaching*” leading to combination of references. *In re Fritch*, 23 U.S.P.Q.2d (BNA) 1780, 1783 (Fed. Cir. 1992) (emphasis added). Furthermore, the showing of a motivation or suggestion to combine references “must be

clear and particular.” *In re Dembiczak*, 50 U.S.P.Q.2d (BNA) 1614, 1617 (Fed. Cir. 1999).

Even assuming for the sake of the argument that the combination of Fullerton and Clark properly teaches the claimed invention, the Office Action fails to provide any proper, objective “evidence of . . . a suggestion, teaching, or motivation” and, hence, does not meet those requirements. *Dembiczak*, 50 U.S.P.Q.2d (BNA) at 1617. The Office Action merely makes the bare assertion that “[i]t would have been obvious to modify Fullerton’s system to derive the threshold signal from the noise floor to have the ability to eliminate most of the spurious signals while maintaining a high probability of receiving real signals.” Office Action at 3; *see also id.* at 4 (“Clark teaches deriving the threshold signal from a noise floor . . .”). The Office Action appears to rely on hindsight, and fails to set forth any objective evidence of record why, at the time of the invention, someone of ordinary skill in the art would have been motivated to combine Fullerton’s and Clark’s teachings. Accordingly, the Applicant respectfully submits that the Office Action does not set forth a *prima facie* obviousness case under 35 U.S.C. § 103.

CONCLUSION

In view of the foregoing, the Applicant respectfully submits that the pending claims are in condition for allowance. Accordingly, the Applicant respectfully requests favorable reconsideration and Notice of Allowance of the claims.

A request for the extension of time and a check in the amount of \$205.00 is enclosed. Should any additional fees under 37 CFR 1.16-1.21 be required for any reason relating to the enclosed materials, the Commissioner is authorized to deduct such additional fees from Deposit Account No. 10-1205/TDCO:006.

The Applicant invites the Examiner to contact the undersigned at the phone number indicated below with any questions or comments, or to otherwise facilitate expeditious issuance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "MR Peterson", written over a horizontal line.

Maximilian R. Peterson
Registration No. 46,469
Attorney for the Applicant

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APPENDIX
MARKED UP VERSION OF AMENDMENTS
AS REQUIRED BY RULE 121

In the Claims:

Please cancel claims 2 and 43, and amend claims 1, 3, 5, 11-12, 14, 20-22, 27, 42, 44, 46, 52-53, and 55, as follows:

1. (Twice Amended) A first-arriving pulse detector circuitry, comprising:
a correlator circuitry configured to correlate a received signal with a template signal to provide an output signal, wherein the received signal comprises a plurality of pulses that result from a transmission of a radio-frequency pulse into a multipath propagation medium, and wherein the plurality of pulses of the received signal comprises the first-arriving pulse; and
a threshold circuitry configured to, in response to the first-arriving signal in the received signal, provide a first-arriving-pulse signal depending on the relative values of the output signal of the correlator circuitry and a threshold signal derived from a noise floor.
2. (Cancelled)
3. (Once Amended) The circuitry of claim [2] 1, in which the correlator circuitry further comprises:
a multiplier circuitry configured to provide an output signal that comprises the product of the template signal and the received signal; and
an integrator circuitry configured to integrate the output signal of the multiplier circuitry to provide the output signal of the correlator circuitry.
5. (Twice Amended) The circuitry of claim 4, in which the first-arriving-pulse signal tends to indicate a time position of [a] the first-arriving pulse in the received signal.

11. (Twice Amended) A radio-frequency (RF) apparatus, comprising:
a radio-frequency circuitry configured to [receive] operate on a received signal,
wherein the received signal comprises a plurality of pulses that result from
a transmission of a radio-frequency pulse in a multipath propagation
medium, and wherein the plurality of pulses of the received signal
comprises a first-arriving pulse; and
a detector circuitry configured to discriminate from a noise floor [a] the first-
arriving pulse [in the plurality of pulses] of the received signal.
12. (Once Amended) The apparatus of claim 11, in which the detector circuitry
further comprises a correlator circuitry configured to correlate the [plurality of pulses]
received signal with a template signal to provide an output signal.
14. (Twice Amended) The apparatus of claim 13, wherein the first-arriving-pulse
signal tends to indicate a time position of the first-arriving pulse in the [plurality of
pulses] received signal.
20. (Twice Amended) A communication system, comprising:
a transmitter circuitry configured to transmit a radio-frequency pulse into a
multipath propagation medium;
a receiver circuitry configured to [receive] operate on a received signal, wherein
the received signal comprises a plurality of pulses that result from the
transmission of the pulse into the multipath propagation medium, and
wherein the plurality of pulses of the received signal comprises a first-
arriving pulse; and
a detector circuitry configured to discriminate from a noise floor [a] the first-
arriving pulse of the [plurality of pulses] received signal.

21. (Once Amended) The system of claim 20, in which the detector circuitry further comprises a correlator circuitry configured to correlate the [plurality of pulses] received signal with a template signal to provide an output signal.

22. (Once Amended) The system of claim 21, in which the detector circuitry further comprises a threshold circuitry configured to provide [a] the first-arriving-pulse signal by comparing the output signal of the correlator circuitry to a threshold signal.

27. (Twice Amended) The system of claim 26, wherein the first-arriving-pulse signal tends to indicate a time position of the first-arriving pulse in the [plurality of pulses] received signal.

42. (Twice Amended) A method of detecting a first-arriving pulse, comprising:
correlating a received signal with a template signal [by] to provide a correlation output signal, wherein the received signal comprises a plurality of pulses that result from a transmission of a radio-frequency pulse into a multipath propagation medium, and wherein the plurality of pulses of the received signal comprises a first-arriving pulse; and
comparing the correlation output signal and a threshold signal to provide a first-arriving-pulse signal,
wherein the threshold signal is derived from a noise floor.

43. (Cancelled)

44. (Once Amended) The method of claim [43] 42, in which correlating the received signal and the template signal further comprises:
multiplying the template signal and the received signal to provide a product signal; and
integrating the product output signal to provide the correlation output signal.

46. (Twice Amended) The method of claim 45, in which the first-arriving-pulse signal tends to indicate a time position of [a] the first-arriving pulse in the received signal.

52. (Twice Amended) A method of detecting a first-arriving pulse of a received signal [among a plurality of pulses], comprising:

transmitting a radio-frequency pulse in a multipath propagation medium;

receiving, by using a radio-frequency circuitry, the received signal, wherein the

received signal comprises a plurality of pulses that result from the

transmission of the radio-frequency pulse into the multipath propagation

medium, and wherein the plurality of pulses of the received signal

comprises a first-arriving pulse; and

discriminating from a noise floor [a] the first-arriving pulse of the received signal

[in the plurality of pulses] by using a detector circuitry.

53. (Twice Amended) The method of claim 52, in which using the detector circuitry further comprises correlating the [plurality of pulses] received signal with a template signal to provide a correlation output signal.

55. (Twice Amended) The method of claim 54, which further comprises using the detector circuitry to provide [a] the first-arriving-pulse signal, wherein the first-arriving pulse signal [that] tends to indicate a time position of the first-arriving pulse [in the plurality of pulses] of the received signal.

PATENT COOPERATION TREATY

#13
09/915 891

From the INTERNATIONAL SEARCHING AUTHORITY

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O'Keefe, Egan & Peterman, LLP

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

To:
MAXIMILIAN R. PETERSON
O'KEEFE, EGAN & PETERMAN, LLP
1101 CAPITAL OF TEXAS HIGHWAY SOUTH
SUITE C-200
AUSTIN, TX 78746

Date of Mailing
(day/month/year)

Applicant's or agent's file reference
TDCO:006PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/US02/23657

International filing date
(day/month/year)
25 July 2002 (25.07.2002)

Applicant
KIM, JONNATHAN, H.

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34, chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90 *bis*.1 and 90 *bis*.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US
Commissioner for Patents
Box PCT
Washington, D.C. 20231
Facsimile No. (703) 305-3230

Authorized officer

Thomas H Tarcza

Telephone No. 703-308-1113

Form PCT/ISA/220 (April 2002)

(See notes on accompanying sheet)

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JUL 29 2003
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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
MAXIMILIAN R. PETERSON
O'KEEFE, EGAN & PETERMAN, LLP
1101 CAPITAL OF TEXAS HIGHWAY SOUTH
SUITE C-200
AUSTIN, TX 78746

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference TDCO:006PCT	Date of Mailing (day/month/year) 30 MAY 2003
International application No. PCT/US02/23657	International filing date (day/month/year) 25 July 2002 (25.07.2002)
Applicant KIM, JONNATHAN, H.	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34, chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90 *bis*.1 and 90 *bis*.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US
Commissioner for Patents
Box PCT
Washington, D.C. 20231
Facsimile No. (703)305-3230

Authorized officer

Thomas H Tarcza

Telephone No. 703-308-1113

Form PCT/ISA/220 (April 2002)

(See notes on accompanying sheet)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference TDCO:006PCT	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US02/23657	International filing date (<i>day/month/year</i>) 25 July 2002 (25.07.2002)	(Earliest) Priority Date (<i>day/month/year</i>) 26 July 2001 (26.07.2001)
Applicant KIM, JONNATHAN, H.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 22

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/23657

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

NEW ABSTRACT

First-arriving-pulse detector (FAP) circuitry (1104) includes a correlator circuitry (1191) and a threshold circuitry (1194). The correlator circuitry correlates a received signal (1197) with a template signal (1203) to provide an output signal (1206). The threshold circuitry (1194) provides a first-arriving-pulse signal (1107) depending on the relative values of the output signal (1206) of the correlator circuitry (1191) and a threshold signal.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/23657

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01S 13/00

US CL : 342/198

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 342/198, 91, 93, 189, 194

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,832,035 A (FULLERTON) 3 November 1998 (12.11.1998), Abstract, col. 2 lines 29-48, col. 4 lines 59-65, col. 5 lines 8-12, col. 6 lines 54-60, col. 10 lines 1-7 and 54-57, col. 11 lines 1-5, col. 12 lines 1-7.	11-15, 20-24, 52-56 ----- 1-7, 16, 25, 42-48, 57
Y	US 5,445,029 A (FALSETTI ET AL.) 29 August 1995 (29.08.1995), Abstract, col. 10 lines 31-34.	1-7, 16, 25, 42-48, 57
A	US 5,920,278 A (TYLER ET AL.) 06 July 1999 (06.07.1999), Abstract, column 1 - column 2 line 10.	1-60
A	US 6,122,224 A (HIGGINS) 19 September 2000 (19.09.2000), Abstract, column 1-3.	1-60
A	US 5,488,662 A (FOX ET AL.) 30 January 1996 (30.01.1996). Abstract, column 2.	1-60



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

21 October 2002 (21.10.2002)

Date of mailing of the international search report

30 MAY 2003

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks

Box PCT

Washington, D.C. 20231

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Authorized officer

Thomas H Tarcza

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INTERNATIONAL SEARCH REPORT

PCT/US02/23657

Continuation of B. FIELDS SEARCHED Item 3:

East, IEEE, INSPEC

search terms: correlator, detector, first arriving pulse, template, threshold circuit.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty and of the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

The claims only.

The description and the drawings may only be amended during international preliminary examination under Chapter II.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confounded with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed